United States Coast Guard
Office of Investigation and Analysis

Analysis of Parasail Vessel Casualties

A Review of Casualties Aboard Inspected and Uninspected U.S. Flagged Vessels Engaged in Parasailing for Hire, CY 1992 - 2001

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A. INTRODUCTION

This study examines all casualties reported to the Coast Guard Marine Safety Offices of inspected and uninspected U. S. flagged passenger vessels operated under the regulations found in 46 CFR Subpart 175.00 (Subchapter T) and 46 CFR Subpart 24.01 (Subchapter C).

PURPOSE OF REPORT

The purpose of this study is to

1) Present historical parasailing casualty data.
2) Make marine safety recommendations based upon the facts and conclusions drawn from the historical data.

This study was initiated following a previous study conducted by G-MOA-2 of "Passenger Deaths and Injuries on Uninspected Passenger Vessels" that showed a possible disproportionate number of injuries (15 of 55 injuries over a five year period, 1996 – 2000) occurring on uninspected vessels engaged in parasailing activity and the deaths of a mother and daughter tandem[1] parasail riders in July 2001.

46 CFR 4.05

Regulations in 46 CFR Subpart 4.05 require the owner or operator of an inspected or uninspected U.S. flagged passenger vessel to report any marine casualty or accident if such casualty or accident occurs upon the navigable waters of the United States, its territories or possessions if the casualty involves:

1) An unintended grounding or allision of a bridge, or;
2) An intended grounding or allision of a bridge that creates a hazard to navigation, environment, or the safety of the vessel, or;
3) A loss of main propulsion, primary steering, or associated control system that reduces the maneuverability of the vessel, or;
4) An occurrence materially and adversely affecting the vessel's seaworthiness or fitness for service or route, including but not limited to fire, flooding, failure or damage to fixed fire-extinguishing systems, lifesaving equipment, auxiliary power generating equipment or bilge pumping systems, or;
5) A loss of life, or;
6) An injury that requires professional medical treatment (beyond first aid) and if the person is engaged or employed on board a vessel in commercial service that renders the individual unfit to perform routine duties, or;
7) An occurrence causing property damage in excess of $25,000 which includes the cost of labor and material to restore the property to its condition before the occurrence but not including salvage cleaning, gas-freeing, dry-docking or demurrage.

[1] Tandem Parasail: The process where two or more passengers are flown under one canopy at the same time in a harness specifically designed for such purpose. Sometimes also referred to as "Multiple Passenger Flight."

THE DATA SOURCE – MSMS , MSIS & MISLE

The data for this study was extracted from the U. S. Coast Guard's Marine Safety Management System (MSMS), which is a static database, populated with data from the Marine Safety Information System (MSIS). The MSIS was the Coast Guard's repository of marine casualty data from January 1, 1992 through December 13, 2001, or roughly ten years of data. It should be noted that the data in the MSMS is only as good as the data entered into the MSIS by individuals at the field units. When entering data into the MSIS there are certain mandatory fields that must be completed in order to open a casualty case. Once a case is opened additional data elements surrounding a particular case may be entered when the information becomes available. Not all fields are required to be filled in and because they are not mandatory, sometimes are not ever populated with data. The Coast Guard's Marine Information for Safety & Law Enforcement (MISLE) System came on line in late December 2001. In most instances MSIS cases were translated into activities within the new MISLE system. In some cases several 2001 casualties were never originally opened in the MSIS but rather entered in the MISLE system. Almost 500 personnel injury activities were reviewed from the MISLE system where the vessel name, service, type class and sub class were returned as unspecified in order to ascertain that all parasailing vessel related casualties were included in this report.

DATA THAT GETS ENTERED

The Coast Guard's MSIS was not capable of specifically identifying a small passenger vessel engaged in parasailing activity. At the time of MSIS system development the "vessel service" field was limited to only a couple of dozen selective categories. After many years, changes to the MSIS were halted to concentrate resources on the development of the new MISLE system. This halt left a void in the "vessel service" field that would be necessary for better identification of vessels and data analysis purposes. This issue has been rectified and a "parasailing vessel" can be identified as a vessel type in the new MISLE system. As of December 14th, 2001 the MISLE system fully replaced MSIS as the Coast Guard's information collection system. The MISLE system and its enhancements will enable better analysis in the future.

EXTRACTING DATA FOR THIS ANALYSIS

Without a definite field to identify vessels engaged in parasailing it was necessary to extract relevant data from a series of queries. The first set of queries searched vessel records for vessel names that included the word "parasail." From this list of vessels we were able to determine if those vessels had been involved in a marine casualty. The second method queried the "involved parties" field that included the words "parasail" or "water sports" when used as part of a company's name. This company information was then used to identify which vessels were associated with those particular companies. We were then again able to identify which of those chosen vessels were involved in a reported marine casualty. Lastly, queries were used to identify the words "parasail" or "water sports" in the "activity" field in the personnel casualty table and the "subject" field in the vessel casualty table. Both fields are free form and not mandatory but some cases were returned where a note was inserted regarding parasailing. The resultant data from the three query methods were merged into one product for analysis. It is certainly possible that a vessel engaged in parasailing activities had a casualty without any such entries made. In some cases a note explaining that the particular vessel was engaged in a

parasailing activity was included in a narrative field but these narrative fields were not available for analysis purposes. Without individually reading literally thousands of small passenger vessel casualty narrative summaries it is impossible to draw out these cases.

VESSELS & PERSONNEL INCLUDED IN STUDY

This study included inspected and uninspected U.S. flagged passenger vessels where it was determined that the vessel carried "passengers for hire" (a valuable consideration that flowed directly or indirectly to the owner, charterer, operator, agent, or any other person interested in the vessel) and engaged in the commercial activity of parasailing.

An inspected vessel must be annually inspected by the Coast Guard and can only carry as many passengers as the certificate of inspection allows. Also, an individual holding a Masters license consistent with size of the vessel and route over which the vessel is operated must be in command of the inspected vessel.

Uninspected passenger vessels may not carry more than six (6) passengers at any time and must be underway in the control of an individual holding at least an Operator of Uninspected Passenger Vessel (OUPV) license.

PARASAILING REGULATIONS

The Coast Guard does not regulate the actual parasailing activity. In some areas, parasailing activities have been regulated to a degree by local city or town ordinances. Particularly, local city agencies have regulated the parasailing activities by issuing permits or licenses to conduct business within their jurisdiction. Mostly, the only stipulations or regulations, they have to adhere to are when (time of day) and where (between certain areas and a particular distance offshore) the parasailing activity may take place.

INDUSTRY SAFETY GROUPS

To fill what is felt a void in the oversight of the parasailing activity, the Parasail Safety Council (PSC) was organized in 1998 (see http://www.parasail.org/psc_directory.htm) and the Professional Association of Parasail Operators (PAPO) organized in 2003 (see http://www.teampapo.org). The Councils are attempting to bring together parasail business owners and operators to promote standard operating practices and to agree on standard technical equipment for the parasail industry. Both groups have developed guidance that set specifications for equipment, standards for operating conditions and requirements for crew training they hope will be adopted by all parasail operating companies. Their goal is for a heightened and more uniformed level of safety for parasailing activities.

B. SUMMARY INFORMATION

PREPARING DATA FOR REVIEW

The data from the extraction process returned 81 rows of data, to review. Each case was pulled up in the MSIS and reviewed in its entirety. Particularly, the narrative summaries were read and various fields checked to ensure an adequate description of the casualty and to ensure accurate information was recorded in each case. Blank and unspecified fields were populated with relevant information provided in the narrative summaries.

Five (5) cases were removed from the population because they involved other types of water sport vessels. The remaining 76 casualties were included in 59 Marine Casualty Cases. In those 59 cases there were 64 injuries and three (3) deaths: 59 passenger injuries and two (2) deaths and seven (7) crewmember injuries and one (1) death. There were nine (9) cases that did not involve any injuries. Seventeen cases involved instances where more than one person was injured.

CASES PER YEAR & QUARTER

The following table shows that over the past ten years the number of reported cases in the United States has been very low, yet increasing. It does indicate what was expected: that the casualty rate is greater in the third quarter of the calendar year at the height of the summer vacation season. It is at this time of year when more parasailing activities are being conducted around the country. As the weather becomes more favorable and summer activities are at their height, so too are parasailing casualty cases. The reason that the first quarter total (14) is higher than the fourth quarter total (7) is because of winter vacationers going to warmer climates where parasailing activities are conducted year round. All 14 first quarter casualty cases occurred in Tampa, Mobile, Honolulu and Guam.

Figure 1

Marine Casualty Cases Per Year & Quarter

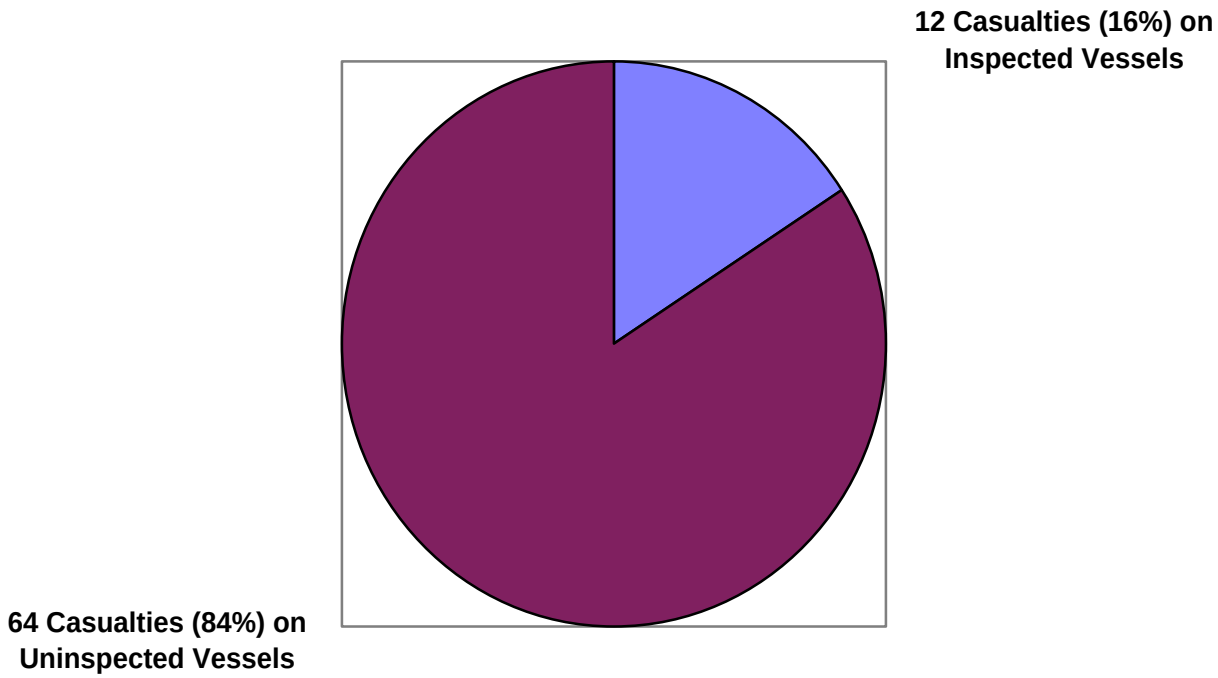
	Cases Per Calendar Year Quarter				Cases Per Calendar Year
Year	1	2	3	4	Grand Total
1992	3	0	0	1	4
1993	2	1	2	0	5
1994	1	2	3	0	6
1995	0	2	1	0	3
1996	0	1	0	2	3
1997	2	1	3	0	6
1998	1	0	3	2	6
1999	2	2	4	1	9
2000	1	3	3	1	8
2001	2	5	2	0	9
Grand Total	14	17	21	7	59

INSPECTED VS. UNINSPECTED VESSELS

Within the 59 Marine Casualty Cases reported to the Coast Guard twelve casualties involved inspected passenger vessels and 64 casualties involved uninspected passenger vessels. In reviewing these individual cases, there were 10 distinct inspected vessels and 42 distinct uninspected vessels involved. The distribution of casualties among these vessels is shown in Figure 2. More incidents (88%) occurred aboard uninspected vessels, as most parasail vessels choose to operate under these regulations.

Figure 2

Total Casualties on Inspected and Uninspected Vessels

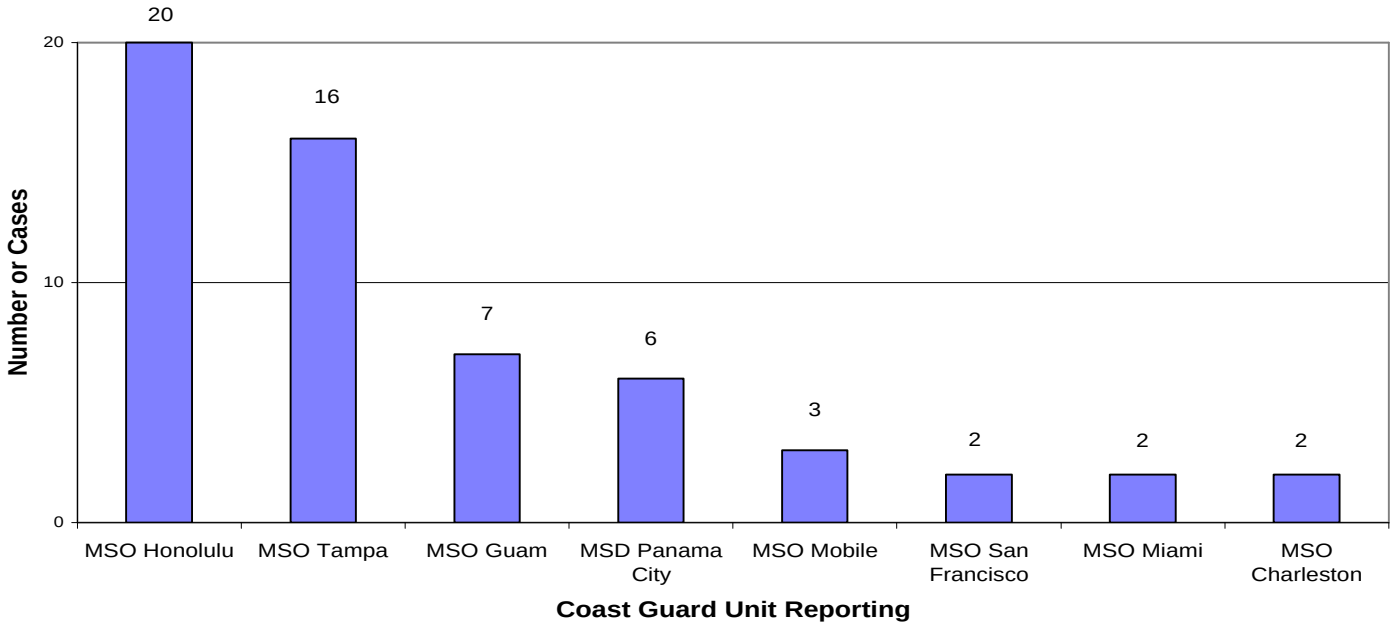


WHERE CASUALTIES WERE REPORTED

The following graph shows the distribution of parasailing marine casualty cases as reported by Coast Guard Marine Safety Offices.

Figure 3

Number of Parasailing Incidents by Unit for Years 1992 - 2001

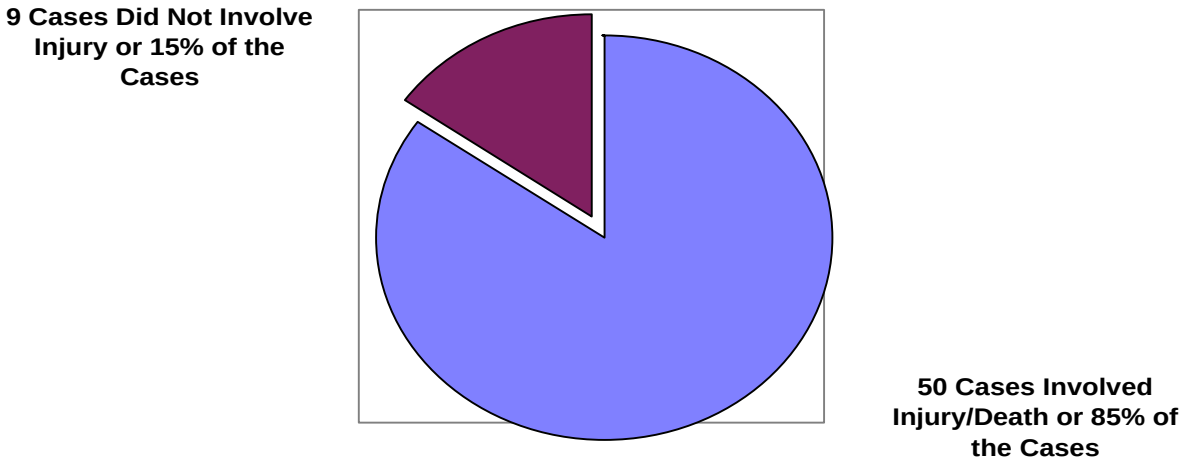


INJURIES

The following chart shows the number and percentage of marine casualty cases involving a personnel injury.

Figure 4

Parasailing Casualty Cases Where Injuries Or Deaths Occurred



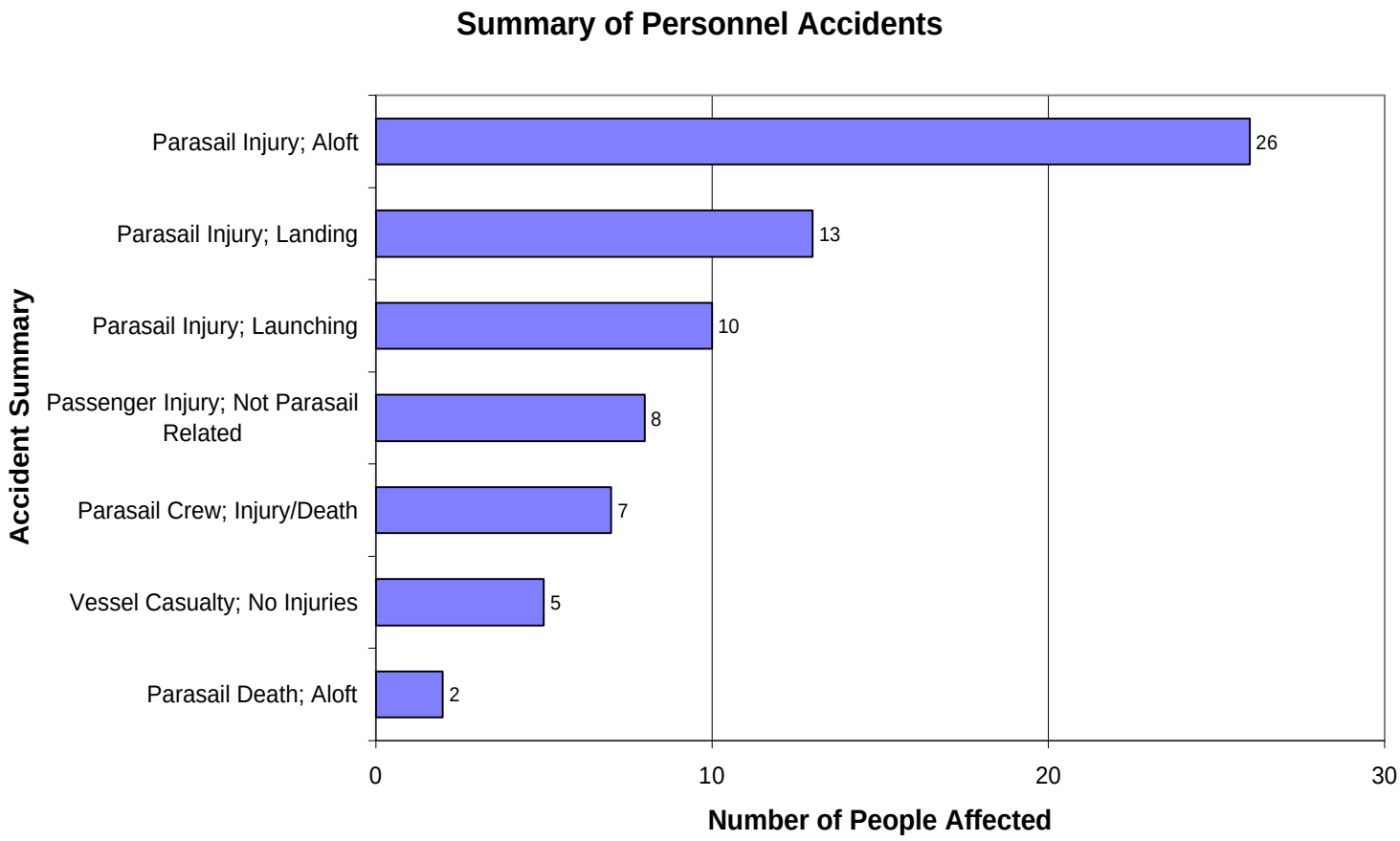
DEATHS

During the ten year period covered by this analysis, only 2 passenger deaths were reported as a direct result of a parasailing activity[2]

ACCIDENT TYPES

The following graph shows the number of accidents by accident type summary.

Figure 5

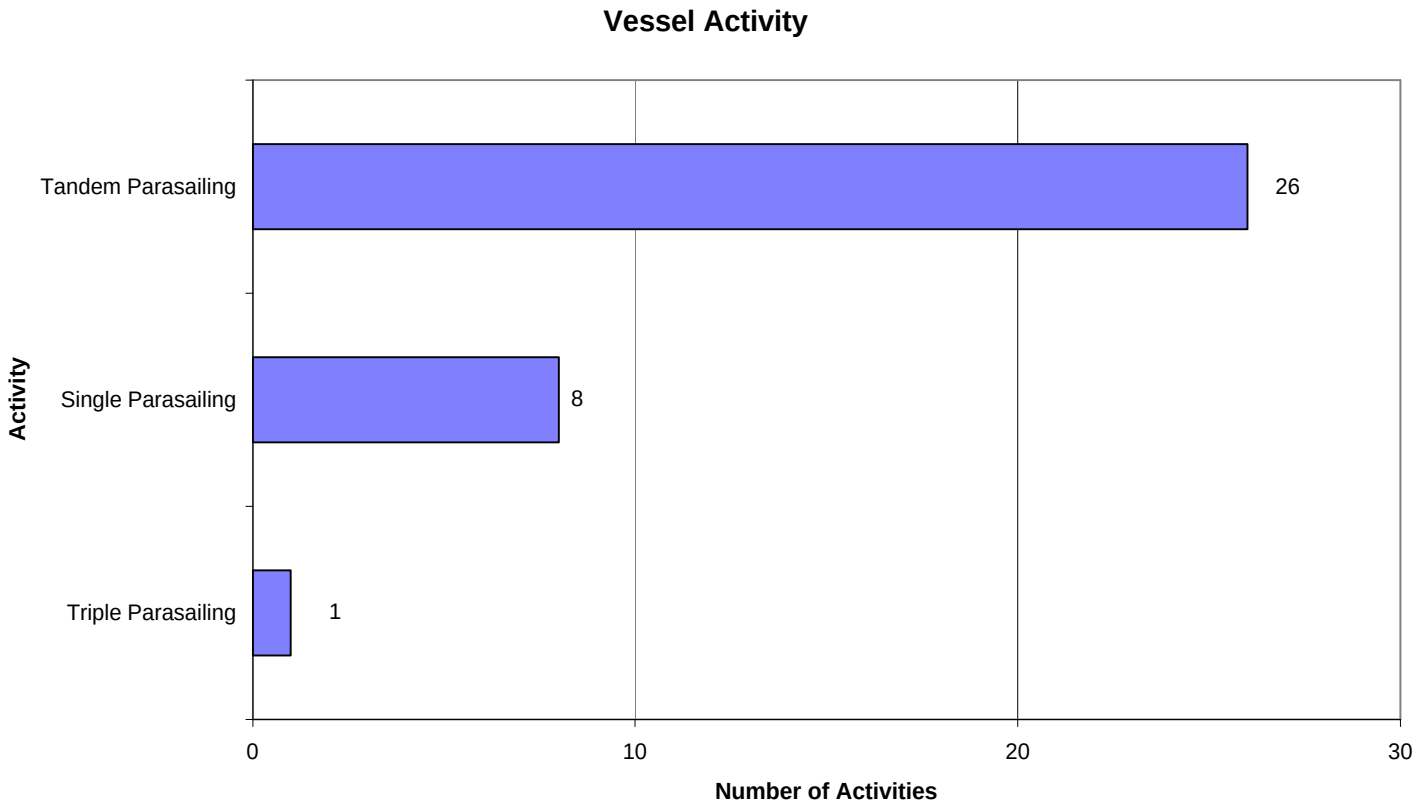


[2]On 11 July 2001, a 37-year-old Kentucky woman and her 13-year-old daughter both died after the pair fell from a distance of greater than 200 feet into 3 feet of water while tandem parasailing off Fort Myers Beach, FL.

VESSEL ACTIVITY

Of the 35 accidents identified where passengers were injured during the parasailing activity, (launching, aloft and landing), this graph shows the type of parasailing activity the operating vessel was engaged in at the time of the reported casualty.

Figure 6



C. BRIEF DESCRIPTION OF PARASAIL CASUALTIES

PARASAIL DEATH; ALOFT

Tandem passengers died from a fall to the water of greater than 200 feet aloft when parasail harness yoke broke during increasingly worsening weather conditions. (1481623).

PARASAIL INJURY; ALOFT

Triple parasailors flown on a heavier chute when winds picked up. Gusts caused severe strain and parting of chute towline. Chute carried the three (3) passengers across Gulf Boulevard and over a tall building before landing in the Gulf of Mexico. One parasailor injured. (MC99014820).

Tandem parasailors dropped into the water when power to parasail winch failed and began to free spool. Cause of failure was a loose wire at the circuit breaker. One passenger suffered a back injury. (MC96017530).

Parasailor injured when entangled in the mast and rigging of passing sailboat approximately 300 feet away. Passenger suffered injuries and taken to hospital. (MC99012188).

One passenger injured from impacting water when tandem parasail towline parted. Apparent cause was the failure of the line. Contributing factors included high winds of approaching storm and aggressive maneuvering of vessel by operator. (MC99004520).

One passenger injured when tandem parasail towline parted. Passengers fell 15 feet into the water but did not experience injuries excessive of first aid. (MC97004774).

Both passengers injured on a tandem parasail flight where they were taken up to a height of 1,100 feet and drifted over an inhabited beach area. Passengers touched down on a five-story building and were run through a pine tree. Capt. admitted he momentarily lost sight of the parasail. (MC99003175)

Tandem parasail towline parted striking and injuring one passenger. Both parasailors fell approximately 30 feet to the water. (MC97004795).

Tandem parasailors aloft when drive shaft sheared causing vessel to go dead in the water. Parasailors descended into water, became entangled in harness and were submerged for approximately 1.5 minutes before crew freed them. (MC93002562).

Parasail yoke broke causing tandem parasail to turn sideways and drift down into the ocean. Passengers were retrieved and did not require medical assistance beyond immediate first aid. (MC95006441).

Towline struck by lightning causing tandem passengers to fall approx 150 feet into the water. CPR was administered and the victims transported to local hospital. (MC97009507).

Tow line parted due to strong gusty winds while using a larger than necessary chute for prevailing conditions causing tandem passengers to fall approx 40-50 feet into the water. (MC93009296).

Tandem parasailing vessel was dipping passengers. Towline passed over helm of another vessel knocking the operator into water. One parasailor and operator of other vessel injured by prop of passing operator-less vessel. (MC95005913).

Tandem parasailing parachute dove rapidly towards the water, causing 20 feet of slack in the towing line. A strong gust of wind pulled the parachute back into the air, causing the towing line to part. Two parasailors injured. (MC00004718).

Tandem parasail yoke parted and two passengers fell into the water. One passenger suffered a strained back. (MC93017631).

Tandem parasailors dropped into the water when parasail hit a wind pocket. Passengers dragged thru water for approximately 2-5 seconds. Parachute regained altitude and passengers winched back onto boat and found injured. (MC99010637).

Parasailor was injured after steering parasail into a cliff alongside the lake. (MC94017429).

Towline began paying out too fast; the captain manually stopped the line to prevent parasailor from going into the water. Passenger claimed back was injured being jerked by the action of the parasail vessel. (MC01005211).

Tandem passengers injured when dragged through the water and entangled in parachute rigging after descending to water due to operator inattention. (164860).

PARASAIL INJURY; LANDING

Tandem parasail passengers injured when they both struck the side of the boat while landing. (MC00011399).

Tandem parasailors were descending and attempting to land on boat when a gust of wind made the parachute swing left and right. One parasailor made contact with the starboard railing with leg and face receiving minor bumps. (MC00004937).

Tandem passengers injured descending under parachute when they hit the water and dragged some distance. Vessel was unable to maneuver and heave in towline when overwhelmed by the force of the wind on the parachute. Towline was purposely cut to alleviate capsizing and flooding of vessel due to heavy winds in stormy weather conditions. (MC01010716).

Tandem parasail towline parted and towing clip struck one passenger resulting in a head injury. Passenger also received right leg abrasions upon freefall landing on water. (MC99003163).

Attempting to land two parasailors onto beach, the chute drifted over power lines & road. One parasailor was injured, suffering a back injury, when they landed on the beach. (MC94017366).

While attempting to land tandem parasailors on beach winds shifted and passengers hit nearby pier hard, causing injury to both. (MC92004407).

Parasail passenger sustained a broken leg while landing. (MC94006638).

While tandem parasailing, boat operator felt the parasail was maneuvering in an unsafe manner. Attempting to land them, passengers struck the water and the towline to the parasail was cut and passengers were recovered. Both suffered injury. (MC92002716).

Parasailor injured upon decent when towline was grabbed while it was being reeled in. Both thumbs crushed between the end of the parachute harness and the winch tower. Person treated at the emergency room. (MC96016669).

PASSENGER INJURY; NOT PARASAIL PASSENGER RELATED

Passenger dove from stern of vessel into shallow water of his own free will in violation of the master's safety instructions. Passenger received severe neck and spine injury from striking seabed. (MC00002901).

Parasail vessel passed over another vessel's wake knocking passenger out of seat. Passenger cracked vertebrae as a result of landing on posterior on deck. (MC94009262).

Seated passenger suffered back injury when operator of the vessel hit a wave entering jetties causing passenger to fly into the air and land on tailbone. Passenger transported by ambulance to hospital. (MC01003503).

After completing a parasailing flight, passenger suffered from hyperventilation. (MC92004182).

While triple parasailing, towline parted and snapped back into the boat hitting a seated passenger in the face. (MC0100789).

Parasailing vessel capsized after exiting boat basin and turning out of channel into heavy surf. Captain, one crewman and four passengers were aboard at the time. Captain was hospitalized with injuries and one passenger was treated for minor injuries and released. (MC96006062).

Passenger aboard parasail vessel injured spine striking seat abruptly when vessel encountered several waves. (MC93002556).

Towline parted and struck a seated passenger at the bow of vessel in the face. (MC93003086).

PARASAIL INJURY; LAUNCHING

Passenger injured while being lifted into the air with parasail. Snap shackle release pin on inflation mast malfunctioned causing passenger to strike stern of vessel. Person went to hospital treated and released. (MC97003555).

Tandem parasailors were launched and towline parted allowing them to descend on their own towards the beach injuring one passenger. (MC98007862).

While preparing for parasail operations, winch slipped causing passenger strapped into harness on take off platform of vessel to slip and fall. Passenger sustained a bruised thigh and cut hand. (MC99006079).

While tandem parasailing chute was out 50 feet when towline slipped 20 feet. Line came taut and

	jerked violently. Rear harness straps failed and rear passenger fell 30 feet to the water. Front passenger was flung over and around the towline, injuring and rendering that passenger unconscious. (MC99008276).
	Parasail towline parted with tandem parasailors lifting them up and backwards into the water and dragging them 200 feet. Both passengers suffered multiple minor injuries. (MC00014142).
	Parasailor hooked up to chute and raised 6' off deck when parachute collapsed and rider fell against back of boat and into water. Taken to hospital, treated and released with minor injuries. (MC97015634).
	Tandem passengers injured impacting flight deck and falling into water returning shortly after take-off due to operator inability to get parasail airborne. One passenger in intensive care one week other passenger released with bruises. (1608327).
VESSEL CASUALTY; NO INJURIES	Parasail vessel's engine stalled and would not restart in boat basin. Vessel moored safely with assistance of another vessel. Fuel pump shutoff switch was cause of engine malfunction. (MC01006558).
	Parasail vessel allided with channel marker due to inattention of boat operator. (MC98016698).
	Parasail vessel's battery died; therefore, bilge pump could not dewater vessel during a rainstorm. Vessel sank while moored. (MC93017639).
	Vessel lost propulsion due to an ignition problem. Parasailor drifted down into water without incident. (MC00012914).
	High winds exerted enough force against the parachute, causing parasail vessel to capsize. Towline parted and parasailor floated to beach, landing without injury. (MC95013675).
CREW DEATH; PARASAIL RELATED	Vessel's engine stalled tandem parasailors descended to water uninjured. Crewmember jumped overboard and assisted passengers out of harness and to safety then he got tangled in parasail towline and drowned. (58013).
CREW INJURY; PARASAIL RELATED	Crewman attempting to bring parasail down by pulling the towline in by hand tore finger off in towline fairlead. (MC98011941).
	While deploying the parasail parachute deckhand in training got entangled in the towline pulling him into the bulwark at stern of the boat, breaking his leg. (MC00007952).
	Parasail towline parted at yoke while conducting pre-flight demonstration. Crewmember fell into water behind vessel injuring neck. Crewmember spent five days in hospital. (17869).
CREW INJURY; NOT PARASAIL RELATED	Vessel was on a warm up run after having recently undergone maintenance when engine failed. Upon restarting vapors accumulated in engine compartment resulting in an explosion. A crewmember received third degree burns behind the left knee and leg. (MC94013767). Parasailing vessel capsized after exiting boat basin and turning out of channel into heavy surf. Capt, one crewman and four passengers were aboard at the time. Captain was hospitalized with injuries and one passenger was treated and released. (MC96006062). Vessel 1st mate fell and hit head on handrail when vessel crossed the wake of another vessel. (MC98001766).
POLLUTION INCIDENT	Sheen was spotted around the stern of the parasail vessel. Sheen was found to be approximately 1/2 gallon of gasoline spilled from a disconnected hose off port outboard motor that had been removed for repairs. (MC01007175).
	PIC overfilled the fuel tank of parasail vessel while refueling. Approximately 1 gallon of diesel fuel discharged through the starboard fuel tank vent into water. (MC97012065).
	Discharge of bilge oil into Honolulu harbor by parasail vessel. (MC94018527).

PERSONNEL INJURY; OTHER

Rental jet ski collided with parasail boat. Impact of jet ski operator's body with the parasail vessel rendered operator temporarily unconscious plus a bruised and cut arm. (MC99008512).

Parasail vessel was underway with parasailor aloft. Parasail vessel crossed over the line of another vessel that was dead in the water towing a tuber. Tubing line was picked up in the propeller of the parasail vessel causing a sudden tug on the line injuring one person on the tube. (MC00005636).

D. COMMENTS

Two passengers and one crewmember died in activities attributed to parasailing in the United States during the ten-year period studied. There were only 49 injuries to passengers and 3 injuries to crewmembers for an average of approximately 5 injuries per year for passengers and a .3 injury per year for crewmembers aboard parasailing vessels. The apparent infrequency of accidents doesn't beckon for special involvement of the U.S. Coast Guard in this area.

DENOMINATOR DATA

The total number of parasailing vessels in operation is unknown. Thus, the data used for this analysis can't be normalized, (i.e., number of injuries per thousand vessels). We have categorized the reported parasailing casualties as non-frequent occurrences, but cannot definitively make this conclusion without knowing the extent of which this covers the entire segment of the parasailing industry. Efforts to determine denominator data for the number of parasailing vessels in operation or the number of passengers carried per year would be burdensome to establish and maintain. As with any extreme activity it is expected that there will be an occasional incident involving injury; therefore there is an element of risk involved to the parasailing passenger. From the data available to the Coast Guard, there doesn't appear to be a major problem with deaths or injuries to personnel or casualties to vessels within the parasail industry. The simple fact that accidents continue to happen indicates that there is certainly room for safety improvement, in order to eliminate casualties to vessels and risk of injury or death to passengers.

LESSONS LEARNED FROM OTHER'S EXPERIENCE

The data reported to the Coast Guard indicates that parasailing accidents occur infrequently. The most common casualty was an injury from a fall aloft while tandem parasailing from an uninspected vessel, the fall being caused by an equipment failure or vessel operator error. In many cases the prevailing weather conditions or a sudden violent change in the weather was a contributing factor that set in motion the events leading to the casualty. Operators of parasail vessels should be cognizant of current and forecast weather and the limitations it will place on parasail operations. They should also be able to recognize the formation of severe weather as it occurs. In the latter case, they should be prepared to take appropriate evasive actions in sufficient time to ensure the safety of their passengers and vessel. The condition of their equipment is also important. Operators should be alert for signs of damage and unusual wear and replace items in a timely manner. Our goal is for parasail operators to review this report and take away lessons learned. Optimistically, they will be able to recognize a serious situation developing and take appropriate action before a casualty occurs. We hope to keep history from repeating itself.